Listing of Claims

1. (Currently Amended) A video communication system comprising a video encoder and a video decoder, wherein the video encoder includes:

a data hiding processing unit for performing a data hiding operation based on an error information received from the video decoder, and transmitting a processed error information to the video decoder, the processed error information having a hidden data; and

a first error concealment processing unit for performing an error concealment with reference to the error information, wherein the first error concealment processing unit performs the error concealment for a frame that corresponds to the error information received from the video decoder, the error concealment generating a reference frame on which the data hiding operation is performed,

the data hiding operation including embedding a number of bits of the error information into a frame currently being encoded, said embedding performed by modifying at least one parameter of the frame currently being encoded ~~depending upon whether~~ in accordance with one or more remainders of the parameter divided by 2 ~~are equal to data to be hidden~~, and

wherein the video decoder includes:

a data extraction unit for extracting an information on an error frame, providing the extracted frame information to the video encoder, and extracting the hidden data including the embedded number of bits provided from the video encoder; and

a second error concealment processing unit for performing an error concealment with reference to the extracted hidden data.

2. (Canceled)

3. (Previously Presented) The video communication system of claim 1, wherein the processed error information is a frame number that corresponds to the reference frame, and wherein the number of bits embedded by modifying said at least one parameter of the frame currently being encoded is indicative of the frame number.

4. (Previously Presented) The video communication system of claim 1, wherein the extracted frame information is an information that represents whether or not the error occurs in each group of blocks.

5. (Currently Amended) The video communication system of claim 1, wherein said at least one parameter is at least one of a quantization parameter corresponding to the frame currently being encoded or a sum of levels ~~value~~ of a block to which a discrete cosine transform is performed.

6. (Previously Presented) The video communication system of claim 5, wherein the level value corresponds to a value obtained by dividing a discrete cosine transform coefficient by the quantization parameter.

7. (Previously Presented) The video communication system of claim 1, wherein the first and second error concealment processing units perform the error concealment by calculating an average of motion vectors of blocks surrounding an error block and performing motion compensation to a reference frame.

8. (Original) The video communication system of claim 7, wherein the surrounding blocks for obtaining the average of the motion vectors are upper and lower blocks of a block in which the error occurs.

9. (Currently Amended) A video decoder comprising:

a variable length decoding processing unit for receiving a compressed video stream from a video encoder and performing a variable length decoding;

a data extraction unit for extracting a hidden data from the variable length decoded stream, the hidden data being transmitted using a data hiding from the video encoder, extracting an information on an error frame, and providing the extracted frame information to the video encoder; and

an error concealment processing unit for performing an error concealment with reference to the extracted hidden data, wherein the hidden data is extracted based on a number of bits of error information embedded in a reference frame included in the compressed video stream,

wherein the hidden data is hidden in the encoder by embedding the number of bits of error information into a frame currently being encoded, said embedding performed by modifying at least one parameter of the frame currently being encoded ~~depending upon whether~~ in accordance with one or more remainders of the parameter divided by two ~~are equal to data to be hidden~~.

10. (Original) The video decoder of claim 9, wherein the hidden data is extracted during an inverse quantization.

11. (Currently Amended) The video decoder of claim 9, wherein the at least one parameter includes at least one of a quantization parameter or a sum of levels ~~value~~ of a block to which a discrete cosine transform is performed.

12. (Canceled)

13. (Previously Presented) The video decoder of claim 9, wherein the extracted frame information is an information that represents whether or not the error occurs in each group of blocks.

14. (Previously Presented) The video decoder of claim 9, wherein the error concealment processing unit performs the error concealment by calculating an average of motion vectors of blocks surrounding an error block and performing motion compensation to a reference frame.

15. (Currently Amended) A video coding method comprising:

extracting an error frame information at a video decoder during a decoding and providing the extracted error frame information from the video decoder to a video encoder;

performing an error concealment at the video encoder based on the extracted error frame information provided from the video decoder, the error concealment generating a reference frame;

performing a data hiding operation based on the reference frame, the data hiding operation including embedding a number of bits of the extracted error frame information into a frame currently being encoded, said embedding performed by modifying at least one parameter of the frame currently being encoded ~~depending upon whether~~ in accordance with one or more remainders of the parameter divided by 2 ~~are equal to data to be hidden~~, and

transmitting the currently encoded frame containing the embedded number of bits to the video decoder; and

extracting the embedded number of bits transmitted from the video encoder at the video decoder, modifying a reference frame of a frame that is encoded, using the extracted hidden data, and performing an error concealment at the decoder.

16. (Previously Presented) The video coding method of claim 15, wherein the extracted error frame information is an information that represents whether or not the error occurs in each group of blocks.

17. (Currently Amended) The video coding method of claim 15, wherein said at least one parameter includes at least one of a quantization parameter or a sum of levels ~~value~~ of a block to which a discrete cosine transform is performed.

18. (Previously Presented) The video coding method of claim 15, wherein the video encoder and the video decoder perform the error concealment by calculating an average of motion vectors of blocks surrounding an error block and performing motion compensation to a reference frame.

19. (Previously Presented) The video communication system of claim 1, wherein the data hiding operation is performed before quantization of the frame currently being encoded.

20. (Previously Presented) The video coding method of claim 15, wherein the data hiding operation is performed before quantization of the frame currently being encoded.

21. (New) The video communication system of claim 1, wherein said modifying includes:

dividing data to be hidden by 2 to obtain a first remainder;

dividing the at least one parameter by 2 to obtain a second remainder;

comparing the first and second remainders; and

modifying the at least one parameter based on a result of the comparison, the number of bits of the error information being embedded in the frame currently being encoded based on the modification to the at least one parameter.

22. (New) The video communication system of claim 21, wherein the parameter is a quantization parameter

23. (New) The video decoder of claim 9, wherein said modifying includes:

dividing data to be hidden by 2 to obtain a first remainder;

dividing the at least one parameter by 2 to obtain a second remainder;

comparing the first and second remainders; and

modifying the at least one parameter based on a result of the comparison, the number of bits of the error information being embedded in the frame currently being encoded based on the modification to the at least one parameter.

24. (New) The video decoder system of claim 23, wherein the parameter is a quantization parameter

25. (New) The video coding method of claim 15, wherein said modifying includes:

dividing data to be hidden by 2 to obtain a first remainder;

dividing the at least one parameter by 2 to obtain a second remainder;

comparing the first and second remainders; and

modifying the at least one parameter based on a result of the comparison, the number of bits of the error information being embedded in the frame currently being encoded based on the modification to the at least one parameter.

26. (New) The video coding method of claim 25, wherein the parameter is a quantization parameter

27. (New) The video communication system of claim 5, wherein when the parameter is the quantization parameter and the one or more remainders are not equal to the data to be hidden, the value of the quantization parameter increases by 1.

28. (New) The video communication system of claim 5, wherein when the parameter is the sum of levels of the block and the one or more remainders are not equal to the data to be hidden, the value of a level having a highest frequency decreases by 1.

29. (New) The video decoder of claim 11, wherein when the parameter is the quantization parameter and the one or more remainders are not equal to the data to be hidden, the value of the quantization parameter increases by 1.

30. (New) The video decoder of claim 11, wherein when the parameter is the sum of levels of the block and the one or more remainders are not equal to the data to be hidden, the value of a level having a highest frequency decreases by 1.

31. (New) The video coding method of claim 17, wherein when the parameter is the quantization parameter and the one or more remainders are not equal to the data to be hidden, the value of the quantization parameter increases by 1.

32. (New) The video coding method of claim 17, wherein when the parameter is the sum of levels of the block and the remainder is not equal to the data to be hidden, the value of a level having a highest frequency decreases by 1.